Aug. 21, 1941

NEW USES FOR FARM PRODUCTS

An interview with Dr. Henry G. Knight, Chief, Bureau of Agricultural Chemistry and Engineering, broadcast Thursday, August 21, 1941, in the Department of Agriculture period, National Farm and Home Hour, over stations affiliated with the Blue network of the National Broadcasting Company.

--ooOoo--

KADDERLY:

In our reports from the United States Department of Agriculture, we dig into the work of the research scientists from time to time, to find out what they're investigating, and the results they're getting. Among the different lines of research, I don't know of any that's more interesting than the work of the Bureau of Agricultural Chemistry and Engineering.

Whenever Dr. Henry G. Knight, Chief of that Bureau drops in ---- and this is one of those times ---- we know he'll have some extraordinary discoveries to tell us about.

KNIGHT:

I'm afraid you're making it sound as though our men were magicians, rather than scientists, Mr. Kadderly.

KADDERLY:

Well, I didn't mean to give that impression, Dr. Knight. But a good many things that seem ordinary to you scientists are spectacular to some of the rest of us. First--let me ask you about the new laboratories that Congress asked your Bureau to set up, to look for new uses of farm products. How are they getting along?

KNIGHT:

All of them are in operation now, and several different research projects are under way at each one.

KADDERLY:

Let's see--those laboratories are located at Philadelphia in the East---and

KNIGHT:

New Orleans in the South, Peoria in the Middle West; and Albany, California, on the West Coast.

Now we've been reminding everyone who inquired about these laboratories that we can't expect to get major results in a short time. The most important fact about our laboratories to date is that they are in operation; several hundred competent chemists, bacteriologists, and other scientists are at work, studying new uses for cotton and peanuts, better ways of preserving apple juice, ways of taking the excess water out of vegetables so they can be transported and stored more readily, and many other problems that are important to the farmer and to the nation.

(Over)

KADDERLY:

But you do have other well-established research work going on, some here in Washington, and some in other laboratories in different parts of the country.

KNIGHT:

Oh yes, and I think you may be interested in some of the things that have been developed in these laboratories. For example, our scientists at the soybean laboratory in Urbana, Illinois, and the Southern Regional Research Laboratory at New Orleans, La., have just developed a new type of safety helmet made of soybeans and cotton.

KADDERLY:

You don't mean an army helmet, do you? One that would stop a bullet?

KNIGHT:

No---these new helmets won't stop a bullet, but they will stop a falling brick or timber, or piece of rock. They'll have their principal use in industry and mining. In a war, they'd be useful for civilians, particularly defense workers who might need protection against flying glass, or falling timbers. The new helmets are considerably lighter than metal helmets, and they release metal for military purposes.

KADDERLY:

These are important advantages. Can you tell us how the helmets are made, Dr. Knight?

KNIGHT:

In a general way--they're made by impregnating cotton cloth with a plastic made from soybeans.

KADDERLY:

Once you found how to make the right sort of plastic, I suppose the rest was comparatively easy. It's amazing, the things that are made from soybeans these days.

KNIGHT:

Probably we've only scratched the surface in finding things that <u>can</u> be made from soybeans, and other farm crops. For example, one piece of research that now seems very important is the extracting of pure protein from soybeans.

KADDERLY:

You mean protein to be used as a food?

KNIGHT:

No---protein to be used as an adhesive, to take the place of casein in coating paper, making plywood, and making water paints. Casein, of course, comes from milk, and we need all the milk that can be produced to use as food. So, the increased utilization of soybeans for this purpose will make available more milk for use as food.

KADDERLY:

Now that's a defense angle that I hadn't thought of. Protein from soybeans takes the place of casein from milk---and so we have more milk for our own people, and more cheese to ship to our friends abroad.

KNIGHT:

That's correct. Just one more item about soybeans. We've recently finished a four year test of paints, comparing the wearing qualities of paints containing soybean oil with paints made from linseed oil and other oils that have to be imported. After four years of exposure to the weather, it looks as though paints made with soybean oil, when correctly mixed, are just as durable as paints made from linseed oil. Since most of our linseed has to be imported, it's useful to know that home grown oil can be substituted with good results. Soybean oil paint dries more slowly than linseed oil, and for best results you have to wait longer between coats. But it does make a long-wearing paint.

KADDERLY:

Dr. Knight---let's switch to some of the chemistry research on other farm crops. For instance, that new work on the dehydration of vegetables.

KNIGHT:

That's important because of the emergency need for concentrated foodstuffs. No results to report on it yet. But we expect to have something within a few months.

KADDERLY:

This work is being done at the Albany, California, laboratory, I understand.

KNIGHT:

Most of it, yes. The investigators are searching for dehydration processes that are more economical than the methods now in use; and that give a better product

KADDERLY:

What it amounts to, then, is improvement of food dehydrating methods that were worked out by Department chemists and engineers during the first World War---and since that time. What vegetables are they working on especially, Dr. Knight?

KNIGHT:

They're concentrating on some that are considered most important from the standpoint of production and diet---onions, white and sweet potatoes, carrots, tomatoes, leafy vegetables, green and wax beans, lima beans, celery, and others.

KADDERLY:

Quite a list.

KNIGHT:

Let me mention another piece of research in the field of developing new industrial uses for farm products---making wax from sugarcane.

KADDERLY:

I don't know much about sugarcane, but I never would have suspected that it had any wax in it.

KNIGHT:

It does have a little---a very light coating on the outside of the stalk. A ton of sugarcane has less than two pounds of wax on it.

KADDERLY:

Two pounds to a ton isn't very much.

KNIGHT:

That's true---and it wouldn't be feasible to collect the wax unless it were concentrated in the process of getting the juice out of the cane. When the cane

KNIGHT: Contd.

is crushed, most of the wax comes off and is held suspended in the sugar juice. Then the juice is clarified, and what settles out the sugar men call just plain "mud". Some of our chemists found that the mud contained anywhere from five to 17 percent wax. So they developed a way of dissolving the wax and getting it out of the mud. Now---we have a new source of inexpensive wax that can be used in shoe polish, floor wax, on ropes for ships and boats, or any other place where wax is used. And in these days when imported waxes are hard to obtain, a supply of 6 million pounds that can be produced at home is well worth having, and aids in our defense problem.

KADDERLY:

Wax from a stalk of sugarcane. I guess the days of the magic wand are past; you chemists have replaced it with a test tube.

KNIGHT:

Well, Mr. Kadderly, I think any chemist will tell you that the only magic in research is hard work---and a desire to find the truth.

Now there's one other piece of research work that I'd like to mention, because I feel it has great possibilities. It's some of our work with sweetpotatoes.

KADDERLY:

You mean, making starch from sweetpotatoes?

KNIGHT:

Yes---that's part of the story, but only part. You're familiar with the starch factory that we started about 7 years ago at Laurel, Mississippi. It's now owned and operated by about 1200 farmers in that area, and it's producing sweetpotato starch on a commercial basis, using methods that our scientists worked out.

In order to operate the starch factory successfully, we had to work out a way of storing the sweetpotatoes, so the plant could operate over a longer period each year.

KADDERLY:

Sweetpotatoes don't keep very long, do they? Unless they're carefully dried.

KNIGHT:

No---they don't. But our scientists have investigated a method of storing sweetpotatoes by grinding the roots to a pulp, treating with limewater, and then drying. It is hoped that by some variation of this method sweetpotato pulp can be kept almost indefinitely. The first value we saw in this was that it would make it possible to operate a starch factory the year 'round. But now it appears that there would be another and even greater significance to the newly found way of storing sweetpotato pulp. As a rule the South does not get large yields of corn or any other grain. But the South <u>can</u> grow sweetpotatoes abundantly. Under average conditions, an acre of sweetpotatoes in the South will produce as much carbohydrate feed as an acre of good corn in the Middle West. In livestock feeding tests conducted at the State Agricultural Experiment Stations in Alabama, Georgia, Mississippi, and Tennessee, cattle and hogs both did well when fed on dried sweetpotatoes or on sweetpotato pulp after the starch had been removed. So, it seems to many people that the South may be on the verge of developing a new feed crop, one which will enable it to produce the livestock it needs so much.

KADDERLY:

(Ad lib conclusion)

--ooOoo--